



**Research Note :**

## **CORRELATION STUDY FOR PHYSICO-CHEMICAL CHARACTERS IN JAMUN**

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**Keywords :** *Jamun, physico-chemical traits, correlation.*

The correlation study between the physical and chemical characters are very useful in understanding the selection procedure for high yielding clones in *jamun*. Most of the *jamun* trees available in India are seedling type in origin. Due to allogamous nature and pre-dominance of seed propagation, enormous variability exists in respect to morphology and physico-chemical characters of fruits. However, no elite line has been recognized and very meager information is available on improvement of *jamun* fruit crop. To initiate any crop improvement programme, selection and hybridization are the important methods. The success of an improvement programme depends mostly on the identification and selection of superior parents for hybridization. Therefore, exploitation of existing variability for improvement of *jamun* in order to encourage commercial orcharding in India was carried out in Pantnagar and Varanasi regions of Uttarakhand and Uttar Pradesh, respectively.

The present study was conducted in laboratory of Department of Horticulture, G.B. Pant University of Agriculture and Technology in July, 2006. The experimental material for this study comprised of twenty five selected *jamun* trees. Twenty trees were selected from Varanasi region (B.H.U campus) and five trees from Pantnagar campus. The data was analyzed according to the procedure of analysis of variance for complete randomized design (CRD)

with three replications in each treatment. The fruits from each tree were collected and observations for physical parameters viz., fruit weight, average fruit size, seed size, seed weight, pulp:seed ratio, pulp percentage etc. and chemical properties viz., total soluble solids, acidity, TSS:acid ratio, total sugars, reducing & non-reducing sugars, Sugar:acid ratio & ascorbic acid were recorded. The estimates of correlation coefficient between all possible pairs of physico-chemical characters of fruits were worked out as suggested by Panse and Sukhatme (3).

In the present correlation study of physico-chemical characters of *jamun* fruits (Table 1) a highly significant positive correlation of fruit length with fruit breadth, seed length, fruit weight and seed weight was recorded whereas significant positive correlation with fruit volume was observed. Fruit breadth was also recorded to be highly significant and positively correlated with seed length, seed breadth, fruit weight, seed weight and fruit volume. A highly significant but negative correlation between fruit breadth and fruit length:breadth ratio was observed. Significant negative correlation was observed between fruit length:breadth ratio and seed breadth. Seed length was highly significant and positively correlated with fruit weight and seed weight. A significant positive correlation between seed length, seed breadth and fruit volume was observed. Seed breadth was highly significant and positively correlated with fruit weight and fruit volume. A significant positive correlation was observed between seed breadth and seed weight, whereas a

Table 1: Correlation analysis of different fruit characters of Jamun.

1	0.567**	-0.106	0.581**	0.103	0.21	0.511**	0.289	0.156	0.523**	-0.309	0.142	0.023	0.148	0.284	0.284	0.019	0.403*	0.198	-0.011	-0.144
2		-0.831**	0.612**	0.523**	-0.242	0.554**	0.326	0.167	0.651**	-0.221	0.108	-0.006	-0.035	0.339	0.339	-0.048	0.572**	0.19	-0.039	-0.214
3			-0.303**	-0.501*	0.396	-0.246	-0.14	-0.045	-0.394	0.003	0.026	-0.028	0.100	-0.133	-0.133	0.094	-0.38	-0.035	-0.004	0.058
4				0.478*	0.036	0.525**	0.279	0.003	0.661**	-0.151	0.11	0.013	0.183	0.184	0.184	0.117	0.443*	0.076	-0.031	-0.133
5					-0.847**	0.539**	0.329	0.093	0.472*	-0.229	0.244	-0.520**	0.04	-0.086	-0.086	-0.023	0.644**	0.106	-0.21	-0.355
6						-0.297	-0.167	-0.055	-0.24	0.12	-0.147	0.567**	0.111	0.219	0.219	0.103	-0.444*	-0.034	0.191	0.298
7							0.805**	0.542**	0.396*	-0.828*	0.749**	-0.393	0.425*	0.233	0.233	0.003	0.922**	0.521**	-0.403*	-0.564**
8								0.721**	0.007	-0.828**	0.852**	-0.349**	0.594**	0.226	0.226	0.072	0.797**	0.607**	-0.512**	-0.589**
9									-0.257	-0.711**	0.829**	-0.274	0.445	0.255	0.255	0.132	0.628**	-0.381**	-0.221	-0.379
10									0.127	-0.28	-0.051	-0.233	0.13	0.131	0.131	-0.099	0.294	0.075	-0.047	-0.184
11										-0.925**	0.324	-0.548**	-0.168	-0.168	-0.168	-0.073	-0.769**	-0.512**	0.419*	0.472
12											-0.388	0.639**	0.124	0.124	0.124	0.094	0.761**	0.477*	-0.404*	-0.474*
13													-0.149	0.101	0.102	0.148	-0.499*	-0.326	0.372	0.621**
14														0.012	0.012	-0.052	0.396*	0.254	-0.228	-0.19
15															1.00*	-0.236	0.236	0.398*	0.18	-0.337
16																-0.236	0.236	0.398*	0.18	-0.337
17																	-0.127	-0.112	-0.102	0.105
18																		0.446*	-0.313**	-0.551**
19																			-0.795**	-0.887**
20																				0.771**

1-Fruit length, 2- Fruit breadth, 3-Fruit Length:Breadth ratio, 4-Seed length, 5-Seed breadth, 6-Seed L:B, 7-Fruit weight, 8-Pulp Weight, 9-Pulp percentage, 10-Seed Weight, 11-Seed percentage, 12-Pulp:Seed ratio, 13-TSS, 14-Ascorbic acid, 15-Total sugar, 16-Reducing sugar, 17-Non reducing sugar, 18-Fruit volume, 19-Titrable acidity, 20-Sugar:Acid, 21-TSS:Acid ratio.

highly significant but negative correlation with seed length:breadth ratio was observed. Seed length:breadth ratio was significant but negatively correlated with fruit volume.

A highly significant positive correlation of fruit weight with fruit length, seed length, pulp weight, pulp percentage, fruit volume and pulp to seed ratio was recorded. A significant positive correlation was observed with seed weight and a highly significant negative correlation was found with seed percentage. Pulp weight was highly significant and positively correlated with pulp percentage, fruit volume and pulp:seed ratio, whereas highly significant but negative correlation with seed percentage was observed. Pulp percentage was highly significant and positively correlated with pulp:seed ratio and fruit volume, whereas a highly significant negative correlation was observed between pulp percentage and seed percentage. Seed percentage showed highly significant but negative correlation with fruit volume and pulp:seed ratio. A highly significant positive correlation was found between pulp:seed ratio and fruit volume.

Highly significant positive correlation of TSS with length:breadth ratio of seed and TSS:Acid ratio was observed, whereas highly significant but negative correlation was observed with seed breadth. A highly significant and positive correlation of TSS:acid ratio with sugar:acid ratio was recorded whereas a highly significant but negative correlation with fruit weight, pulp weight, fruit volume and titrable acidity was recorded. A significant but negative correlation with pulp:seed ratio was also recorded.

Acidity was highly significant and positively correlated with fruit weight and pulp weight. A significant and positive correlation with pulp:seed ratio, total sugar, reducing sugar and fruit volume was observed, whereas a highly significant but negative correlation with seed percentage was recorded. Highly significant and positive correlation of ascorbic acid with pulp weight and pulp:seed ratio was observed whereas a significant positive correlation with fruit weight and pulp

percentage was recorded. A highly significant but negative correlation with seed percentage was also reported. Reducing sugar showed highly significant positive correlation with total sugar and a significant positive correlation with titrable acidity. Sugar:acid ratio was significant and positively correlated to seed percentage whereas it was highly significant but negatively correlated with pulp weight and titrable acidity.

Correlation study between different physico-chemical characters of fruits from the selected *jamun* genotypes showed highly significant positive correlation of pulp weight, fruit volume, pulp to seed ratio and titrable acidity with fruit weight. Seed percentage had highly significant but negative correlation with fruit weight. These findings are in accordance with Asna *et al.* (1) in Cape gooseberry and Inamdar *et al.* (2) in *jamun*. To conclude, major emphasis in selection should be given for higher pulp weight, fruit volume, fruit size & pulp: seed ratio. Also higher TSS and acidity along with less seed sized should be considered for selecting superior genotypes.

#### Acknowledgement

The corresponding author gratefully acknowledges the financial assistance in the form of JRF provided by the ICAR, India during the course of investigation at G.B. Pant University of Agriculture and Technology, Pantnagar.

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